

# **Does Acrylamide Monomer Percolate Below the Root Zone in PAM-Treated, Furrow Irrigated Fields?**

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## **ABSTRACT**

Groundwater seepage contributes to irrigation return flows and surface waters. Water-soluble polyacrylamide (PAM) used to reduce erosion in furrow irrigated fields and other agriculture applications contains, < 0.05% Acrylamide monomer (AMD); however, AMD is a potent neurotoxicant and suspected carcinogen, it is water soluble, and is transported readily in flowing water. Present knowledge of AMD concentrations and loads in percolation water that enters the vadose zone beneath PAM-treated furrow-irrigated fields is lacking. We measured the AMD in water leached below the crop root zone in a furrow-irrigated Portneuf silt loam. Vacuum operated percolation samplers were used to monitor soil water flux, and collect leachate water. The samplers were placed at 1.2 m depths at 30 m and 150 m across a 180-m-long corn field that was furrow irrigated using either conventional or PAM treatment. Percolation water and furrow water inflows were monitored for AMD during and after three furrow irrigations. The samples were analyzed for AMD using Gas Chromatography and electron detector with minimum detection limit of 0.05 ppb. Furrow inflows contained an average AMD concentration of 5.5 ppb. The AMD in percolation water samples never exceeded the minimum detection limit, < 0.05 ppb. Our results indicate that the AMD entering these soils at very dilute concentrations is degraded before infiltrating water can percolate down to 1.2 m depth. This suggests that the risk of AMD contamination of groundwater from PAM-treated irrigations on these soils is minimal. Topic: Management: Nutrients, Pesticides, Dairy Wastes, Ground Water (GWMA), Watersheds and Ecosystems, BMPs, Rangeland, AFO, CAFO, Irrigation

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